APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/885,382	06/19/2001	John Erik Lindholm	NVIDP036	4936

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EXAMINER
TUNG, KEE M

ART UNIT	PAPER NUMBER
2676	13

DATE MAILED: 06/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

	Application No.		Applicant(s)
Office Action Summary	09/885,382		LINDHOLM ET AL.
	Examiner		Art Unit
	Kee M Tung		2676

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on *26 April 2004*.

2a) ☒ This action is **FINAL.**   2b) ☐ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *1-18 and 20-34* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☒ Claim(s) *22-34* is/are allowed.

6) ☒ Claim(s) *1-18,20 and 21* is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All   b) ☐ Some * c) ☐ None of:

      1. ☐ Certified copies of the priority documents have been received.

      2. ☐ Certified copies of the priority documents have been received in Application No. _____.

      3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

The amendment filed 4/26/04 has been considered in preparing this Office action.

Claim Rejections - 35 USC § 103

1.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2.   Claims 1-18, 20 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baldwin (5,764,228) in view of Chan et al (6,163,837 hereinafter "Chan"), Brethour et al (6,577,316 hereinafter "Brethour") and Huff et al (6,288,723 hereinafter "Huff").

As per claim 1, Baldwin teaches a method for programmable pixel processing in a computer graphics pipeline (Figs. 2A-2F and respective areas of the spec.) comprising receiving pixel data from a source buffer (such as, input FIFO in Fig. 2A); performing programmable operations (such as, programmable Glint graphics processor performs graphics pipeline operations in Figs. 2A-2F) on the pixel data in order to generate output (output to host interface), wherein the operations are programmable by a user (col. 13, line 35 to col. 18) utilizing instructions from a predetermined instruction set (the instructions uses for performing all the pipelined operations (see col. 13, line35 to col. 64, line 63); and storing the output in a register (output FIFO in Fig. 2A); wherein the instructions include a no operation (col. 65, line 48), texture fetch (col. 58, lines 36-

39), move (col. 41, lines 44-45, copy operation moves blocks), derivation (col. 35, line 7

to col. 36, line 41), reciprocal (1/X), distance vector (Z-buffering), pack (col. 55, lines

20-24), set on less than (col. 26, lines 15-18), set on greater or equal than (col. 25, lines

53-56), floor (col. 46, line 52), fraction (col. 42, line 40), kill pixel (col. 38, lines 1-10),

light coefficients (col. 1, lines 34-38 and col. 10, lines 38-49). Baldwin further teaches

performing an operation consisting of a scissor, color format, alpha, z-buffer, blend,

logic, dither and writemask operations (figs. 2A-2F) and pixel data is selected from the

group consisting a position, pixel diffuse color, specular color, fog value, and a plurality

of texture coordinates (col. 62, lines 1-57). However, Baldwin fails to explicitly teach dot

products, exponential based 2, ...   These are what Chan, Brethour and Huff teach.

Chan teaches the following instructions (col. 11 to col. 15): comprising at least move,

add, multiple, multiply and add, compare equal, compare less than or equal, minimum,

maximum, exponentiation, reciprocal square root, pack, pixel distance, dot product.

Brethour teaches ALU module 22 performs typical operations, such as, add, min, max,

etc (col. 7, lines 40-43); MAC 25 performs multiply and addition (col. 7, lines 50-63);

reciprocal module 24 performs reciprocal of floating point number; transcendental

module 26 performs exponential base 2, logarithm base 2 and inverse square root (col.

8, lines 11-19). Huff also teaches instruction set (Fig. 1, 118) comprising move,

multiply, add, square root, shuffle, square root reciprocal, pack and unpack. Therefore,

it would have been obvious to one of ordinary skill in the art at the time the present

invention was made to combine the teachings of Huff, Brethour and Chan into

programmable pipeline graphics processing of Baldwin in order to achieve high speed,

increase the pipeline processing throughput during execution of the instructions. Therefore, at least claims 1-8, 20 and 21 would have been obvious.

As per claim 9, Baldwin teaches swizzling the pixel data prior to performing the programmable operations thereon includes a component remapping (col. 13, lines 37-60).

Claims 10-18 additionally require well-known graphics (texture) operations which would have been obvious in view of the teachings of graphics pipelined operations of Baldwin (Figs. 2A-2F).

Response to Arguments

3.   Applicant's arguments filed 4/26/04 have been fully considered but they are not persuasive.

Applicant's arguments with respect to claims 22-34 have been considered and the rejection has been withdrawn in view of the arguments and amendment.

Regarding claims 1-18, 20 and 21, applicant basically argues that the prior art teaches programmable vertex processing and applicant claims a technique for programmable pixel processing and pixel processing and vertex processing are two totally different processing and from non-analogous art. The examiner disagrees because both pixel and vertex processing are part of the graphics processing and both are in the same graphics processing art.

Further, regarding example of "no operations" instruction, it is noted that it is not what processing is being performed, either pixel or primitive, it is what the operations are being performed. In this case, it is a no operations which is suggested by Baldwin.

Regarding claims 10-18, it is noted that the graphics processor of Baldwin supports or teaches texture mapping operation as shown in the drawings and the specification.

Conclusion

4. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Conclusion

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kee M Tung whose telephone number is 703-305-9660. The examiner can normally be reached on Tuesday - Friday from 5:30 am - 4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Bella can be reached on 703-308-6829. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Kee M Tung
Primary Examiner
Art Unit 2676